

Claims

What Is Claimed Is:

1. A method for resolving a message collision for a message transmitted over a wireless TDMA packet channel for a first subscriber communicating in a half duplex mode comprising:
 - dividing an outbound message designated for the first subscriber and producing therefrom an independent first message portion and an independent second message portion wherein each of the independent first and second message portions are allocated to two different wireless outbound reservations;
 - first transmitting the independent first message portion based on a first outbound reservation;
 - detecting whether collision occurred between an inbound transmission from the first subscriber and the transmitted independent first portion destined for the first subscriber; and
 - if a collision is detected, avoid sending the independent second message portion to the first subscriber, otherwise, send the independent second message portion for the first subscriber based on a second outbound reservation.
2. The method of claim 1 including the steps of:
 - when a collision is detected, sending a third independent message portion from a second outbound message destined for a different subscriber based on another outbound reservation, and sending a fourth independent message portion from the second outbound message for the different subscriber; and
 - then re-transmitting the independent first message portion for the first subscriber.

3. The method of claim 1 including the steps of:
- determining a message length of the outbound message;
 - if the message length is within an acceptable short length, transmitting the outbound message without dividing the outbound message and without producing therefrom the independent first message portion and the independent second message portion.
4. The method of claim 1 wherein the step of dividing the outbound message includes producing a short independent message as the independent first message portion and producing the independent second message portion as including any remaining portion of the outbound message not included in the short independent message portion.
5. The method of claim 4 wherein the independent first message portion includes a first header containing at least a subscriber identifier that identifies the first subscriber and data representing the short independent message length and wherein the independent second message portion includes a second header containing at least the subscriber identifier and data representing a length of the remaining portion of the outbound message.
6. A method for resolving a message collision for a message transmitted over a wireless TDMA packet channel for a first subscriber communicating in a half duplex mode comprising:
- transmitting an outbound message designated for the first subscriber;
 - detecting whether collision occurred between an inbound transmission from the first subscriber and the transmitted outbound message;
 - if a collision is detected, placing collision detection data in a control slot readable by other subscribers, wherein the collision detection data indicates that the outbound message for the first subscriber has been terminated due to a collision; and
 - stopping the transmission of the rest of the outbound message for the first subscriber, and leaving the message in a message queue for later transmission.

7. The method of claim 6 including the step of:

if a collision is not detected, continuing the transmission of the
outbound message for the first subscriber;

determining whether there is a unsent outbound message for another
subscriber in a message queue due to a previously detected collision; and
if so, sending the unsent outbound message for the other subscriber.

8. The method of claim 6 including the steps of:

dividing the outbound message designated for the first subscriber and
producing therefrom an independent first message portion and an independent
second message portion wherein each of the independent first and second
message portions are allocated to two different wireless outbound
reservations;

first transmitting the independent first message portion based on a first
outbound reservation;

detecting whether collision occurred between the inbound transmission
from the first subscriber and the transmitted independent first portion destined
for the first subscriber;

if a collision has occurred, determining whether the control slot will be
sent during transmission of the independent first message; and

if the control slot will be sent during the transmission of the
independent first message, terminating the transmission of the independent
first message and assigning the next slot after the control slot to the next
message .

9. The method of claim 8 including the steps of:

when a collision is detected, sending a third independent message
portion from a second outbound message destined for a different subscriber
based on another outbound reservation, and sending a fourth independent
message portion from the second outbound message for the different
subscriber; and

then re-transmitting the independent first message for the first
subscriber.

10. The method of claim 8 including the steps of:
- determining a message length of the outbound message;
- if the message length is within an acceptable short length, transmitting
- 5 the outbound message without dividing the outbound message and producing
- therefrom the independent first message portion and the independent second
- message portion.
11. The method of claim 8 wherein the step of dividing the outbound message
- includes producing a short independent message as the independent first
- 10 message portion and producing the independent second message portion as
- including any remaining portion of the outbound message not included in the
- short independent message.
12. The method of claim 11 wherein the independent first message portion
- 15 includes a first header containing at least a subscriber identifier that identifies
- the first subscriber and data representing the short independent message
- length, and wherein the independent second message portion includes a
- second header containing at least the subscriber identifier and data
- 20 representing a length of the remaining portion of the outbound message.

13. A wireless TDMA network element for resolving a message collision for a message transmitted over a wireless TDMA packet channel for a first subscriber communicating in a half duplex mode comprising:
- 5 at least one processing device; and
- memory, operatively coupled to the processing device, containing executable instructions that when read by the at least one processing device causes the at least one processing device to:
- 10 divide an outbound message designated for the first subscriber and producing therefrom an independent first message portion and an independent second message portion wherein each of the independent first and second message portions are allocated to two different wireless outbound reservations;
- first transmit the independent first message portion based on a first outbound reservation;
- 15 detect whether collision occurred between an inbound transmission from the first subscriber and the transmitted independent first portion destined for the first subscriber; and
- if a collision is detected, avoid sending the independent second message portion to the first subscriber, otherwise, send the independent second message portion for the first subscriber based on a second outbound reservation.
- 20
14. The apparatus of claim 13 wherein the memory contains executable instructions that when read by the at least one processing device causes the at least one processing device to:
- 25 when a collision is detected, send a third independent message portion from a second outbound message destined for a different subscriber based on another outbound reservation, and sending a fourth independent message portion from the second outbound message for the different subscriber; and
- 30 then re-transmit the independent first message for the first subscriber.

15. The apparatus of claim 13 wherein the memory contains executable instructions that when read by the at least one processing device causes the at least one processing device to:
- determine a message length of the outbound message; and
- 5 if the message length is within an acceptable short length, transmit the outbound message without dividing the outbound message and produce therefrom the independent first message portion and the independent second message portion.
- 10 16. The apparatus of claim 13 wherein the memory contains executable instructions that when read by the at least one processing device causes the at least one processing device to:
- produce a short independent message as the independent first message portion and produce the independent second message portion
- 15 as including any remaining portion of the outbound message not included in the short independent message.
- 20 17. The apparatus of claim 16 wherein the independent first message portion includes a first header containing at least a subscriber identifier that identifies the first subscriber and data representing the short independent message length, and wherein the independent second message portion includes a second header containing at least the subscriber identifier and data representing a length of the remaining portion of the outbound message.

18. A wireless TDMA network element for resolving a message collision for a message transmitted over a wireless TDMA packet channel for a first subscriber communicating in a half duplex mode comprising:

5 at least one processing device; and
 memory, operatively coupled to the processing device, containing executable instructions that when read by the at least one processing device causes the at least one processing device to:
 transmit an outbound message designated for the first subscriber;
10 detect whether collision occurred between an inbound transmission from the first subscriber and the transmitted outbound message;
 if a collision is detected, place collision detection data in a control slot readable by other subscribers, wherein the collision detection data indicates that the outbound message for the first subscriber has been terminated due to a
15 collision; and
 stop the transmission of the rest of the outbound message for the first subscriber, and leaving the message in a message queue for later transmission.

19. The apparatus of claim 18 wherein the memory contains executable
20 instructions that when read by the at least one processing device causes the at least one processing device to:
 if a collision is not detected, continue the transmission of the outbound message for the first subscriber;
 determine whether there is a unsent outbound message for another
25 subscriber in a message queue due to a previously detected collision; and
 if so, send the unsent outbound message for the other subscriber.